Particle Accelerator Technology
&
High Energy Physics

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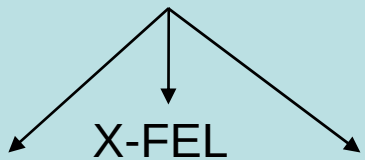
Indian Collaboration: Particle Accelerator Technology

ILC Collaboration

ILC Technology



X-FEL
High Intensity Proton Source
Next Generation Light Source

Indian National Accelerator Plan

Light Source
High Intensity Proton Source
Spallation Neutron Source
Next Generation Light Source

India International Accelerator collaboration

Large Hardon Collider
International Linear Collider

- Collaboration on "ILC Particle Accelerator Technology" will enable development of next generation particle accelerators in India and abroad.
- This collaboration will also educate students, engineers and technicians to use the advanced technologies in universities, laboratories and industry in India.

The ILC technology

- This technology broadly expands the possibilities for ever
  - Brighter light sources
  - High intensity proton
  - Neutron machines.

- The Euro-XFEL Project, to be located at DESY, will employ ILC SRF technology to provide high brightness, femto-second pulsed X-ray beams.

- Fermilab is designing a high intensity proton machine using the ILC SRF technology.
  - high intensity X-rays
  - produce spallation neutron beams.

- Cornell University and Thomas Jefferson Laboratory are performing R&D for an “Energy Recovery Linac” (ERL) using SRF technology.

We should investigate common Accelerator Design

Indian Collaboration Topic

There are several areas where India can start collaboration and make significant contribution to the ILC program

- Design and Drafting of ILC Cryomodule (2 design and draft engineers at Fermilab and several in India (BARC))
- Design of ILC Beam Dump
- Positron Production Target R&D
- Fabrication of Tuner and coupler
- High power Marx Modulator, Sheet Beam Klystron
- Cryogenic distribution
- R&D: Laser Welding, Surface treatment of Niobium, Beam tube for Damping Ring
- Magnet: Damping Ring, Beam Delivery System
- Controls: Software and Hardware
- Accelerator Physics
- Infrastructure: Electron Beam Welding
- High Intensity Proton Accelerator Front End development
- Detector R&D: Silicon, Electronics